SPT2349-56: the most massive and active proto-cluster known at z=4.3

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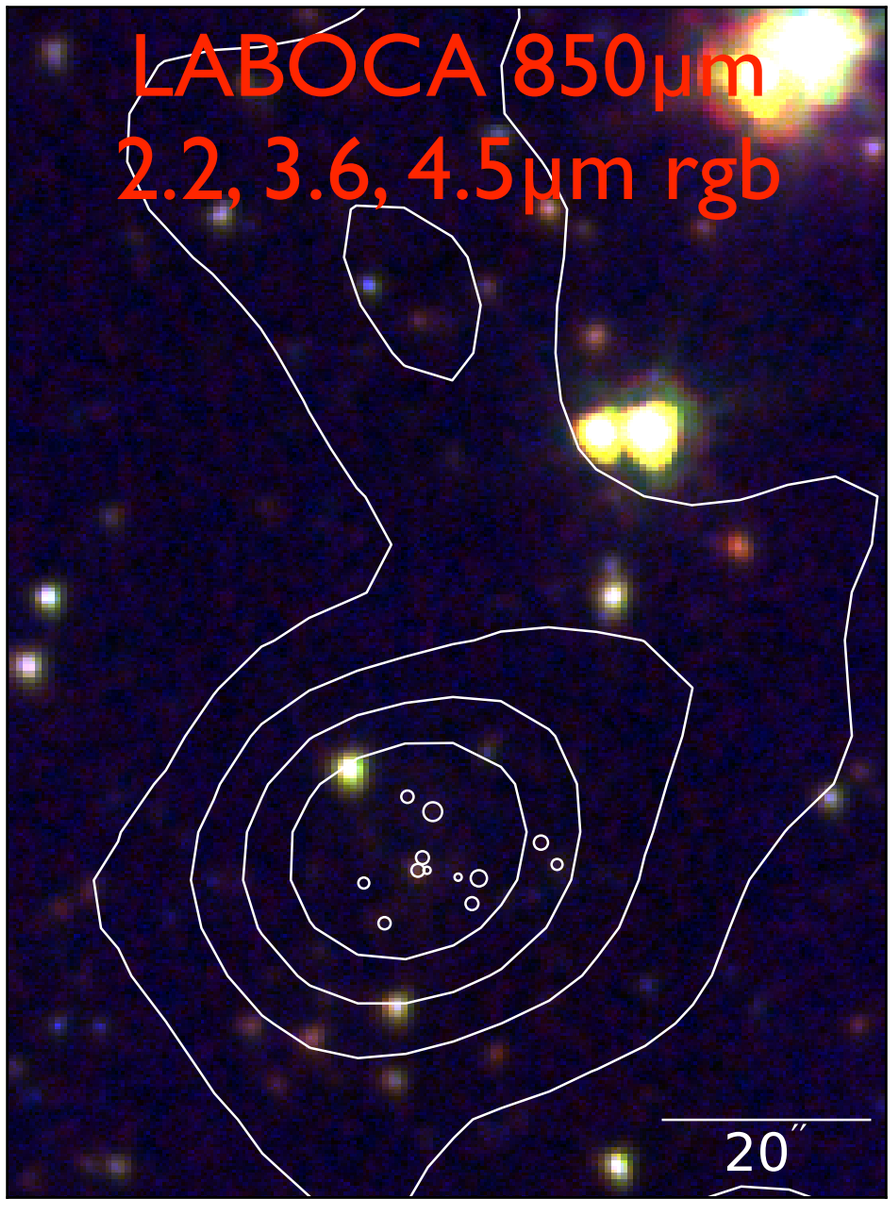
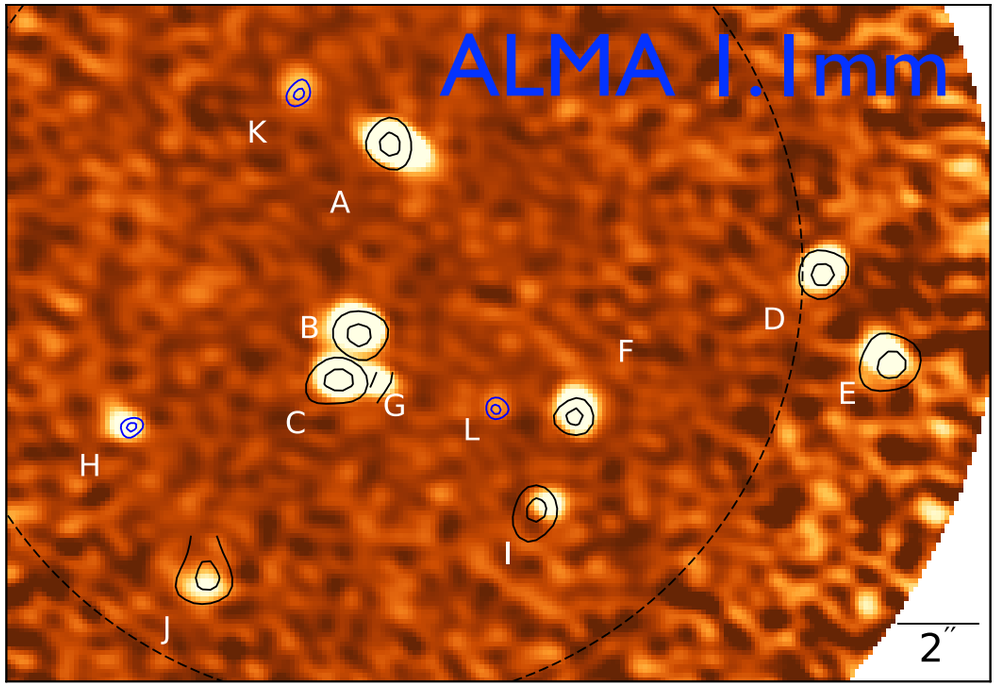
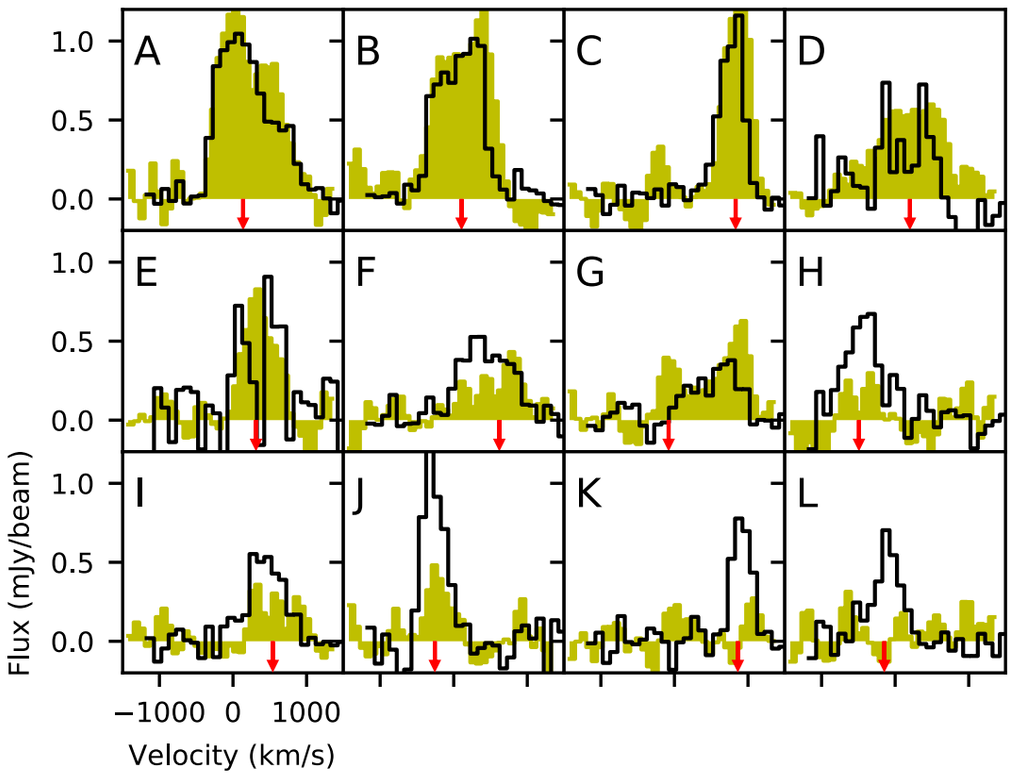
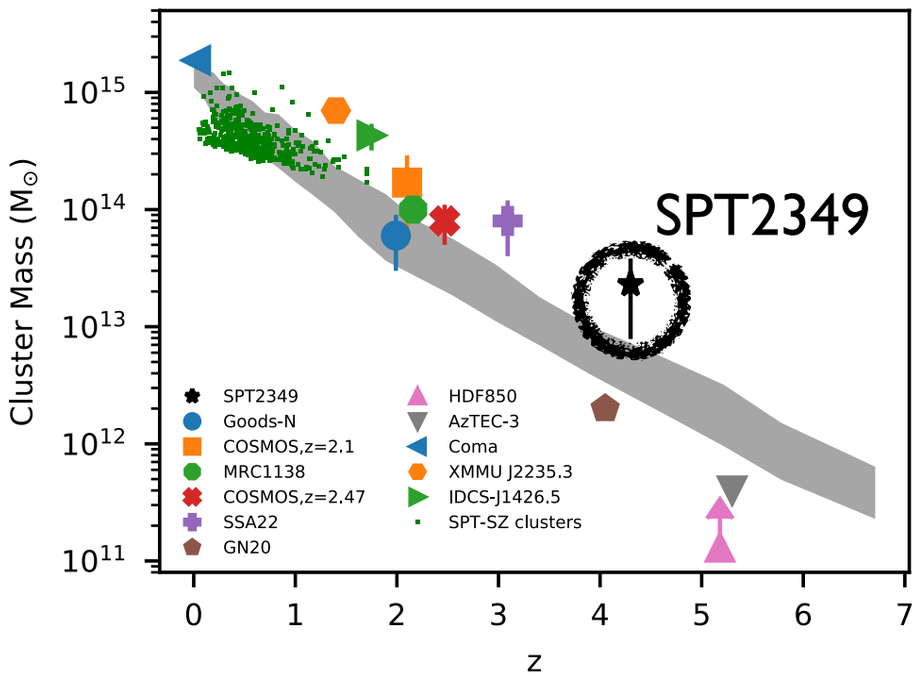
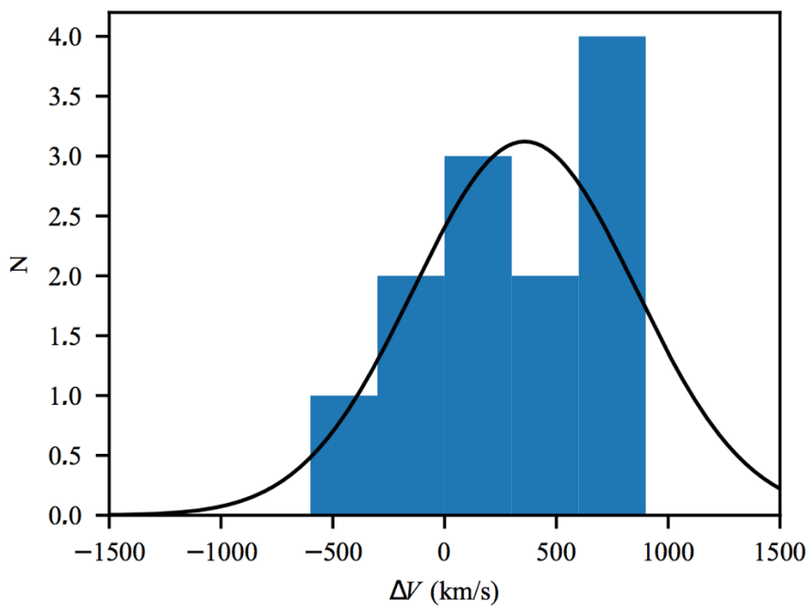
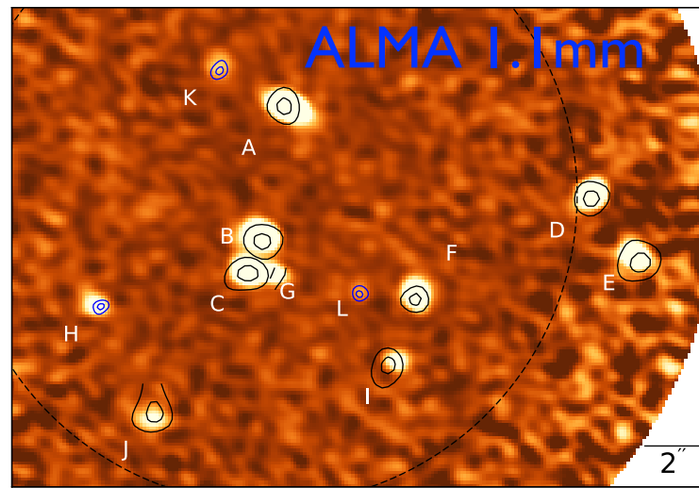


- Unique source in 2500 deg^2 SPT-SZ survey, all others are lensed DSFGs or weaker.
- SPT2349-56 not even detected with Planck.
- Bright mm source splits up in >12 components in ALMA 1.3mm map.
- Only 34 out of ~100 mJy LABOCA flux recovered → more missing components?



How rare is SPT2349-56?

- 12 galaxies confirmed in 13” radius using [CII] and CO(4-3) lines.
- 70<SFR<1800, total 6800 $M_\odot$/yr, up to 22000 accounting for full 850μm flux.
- Velocity dispersion 500 km/s implies a viral cluster mass ~$2\times10^{13} M_\odot$.
- Extreme SFR density with <1’ compared to other proto-clusters!

ALMA CO(4-3) (yellow) + [CII] (black)